

## ABSTRACT OF THE DISCLOSURE

A first dispersion compensation fiber and a second dispersion compensation fiber are serially connected to constitute a dispersion compensation module, the first dispersion compensation fiber having a  
5 negative dispersion value and a negative dispersion slope, and the second dispersion compensation fiber having a negative dispersion value and a negative dispersion slope different from the negative dispersion value and the negative dispersion slope that the first dispersion compensation fiber has. The dispersion slope that first  
10 dispersion compensation fiber presents a change convex to the upward direction following a wavelength change. The dispersion slope that the second dispersion compensation fiber presents a change convex to the downward direction following a wavelength change. The transmission optical fiber is connected to the dispersion compensation module.  
15 When a WDM transmission is carried out in an optionally selected signal waveband including at least 1530 to 1625 nanometers, the dispersion compensation module securely compensates for the dispersion and the dispersion slope accumulated in the transmission optical fiber.